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THE GRUNTING OX OF THIBET.

This singular species of cattle feeds in a cold narrow strip of the country of which it here bears the name, that is to say, between 17 degrees, and 18 degrees North latitude, on the northern borders of Thibet. It however is in extensive use among the Duckra Tartars, as a beast of burthen, and a milch animal, from whose milk great quantities of butter are annually made by them for commerce. It resembles, in certain points, several other species of the genus Bos, and is still but imperfectly known to us. The description, given by Captain Turner, of the English embassy to Thibet, is sufficiently particular for our present purpose; and we will give it in an abridged form.

The Bos Grunniens, or Grunting Ox, or Yak of Tartary, called by Turner the Bushy-tailed Bull of Thibet, bears the name of Soora-goy in Hindostan, and is about of the same size as a common English bull, which it resembles in the form of its body, head and legs. It differs from it chiefly in its coat, being covered all over with thick hair. The head is rather short, and the horns round and curving. The ears and nose are small, and the forehead so covered with curled hair as to appear convex. The neck is short, and curved equally above and below; withers high and arched, and legs short. Over the shoulders rises a thick muscle, which seems to resemble that of the Hindoo Ox, but is overgrown with a profusion of soft hair, generally longer than that on the ridge of the back; and the tail is covered with a prodigious quantity of long, glossy, flowing hair, by which it is totally concealed.

The hair on the superior parts resembles thick, soft wool; but on the inferior is strait and pendant to a remarkable degree. Capt. Turner saw some animals, in high flesh, whose hair trailed on the

ground. On the chest is a long, tapering bunch of coarse hair, which shows a different texture from the rest of the covering. The only noise it makes is a low grunt, which is seldom heard, except when the animal is irritated.

This animal, so distinguished by the thickness and warmth of its coat, as might be expected, is found to prefer cold regions, and is pastured with the greatest success on the bleak elevated plains and mountain tops of Thibet in the summer, and among the neighboring vallies in the winter. The Tartars who possess the Yak find it invaluable, in their nomadic life, and not only make great quantities of butter from its milk, which they sell in skin bags and bladders, in which it may be kept good for a year, but form their tents and ropes of its hide. They however do not employ the Yak in agriculture, though it is very useful to them for carrying burthens. Its temper is less kind and gentle than that of most other oxen; it has a lowering look and a suspicious disposition.

The Musk Ox of North America bears some resemblance to the Yak, and we add a description:

The Musk Ox.—This animal, so rare in civilised countries, indeed so wholly confined in its range to inhospitable and almost uninhabited regions, has yet something agreeable in its appearance, as well as mild and harmless in its nature. It is found only in the northern parts of our continent, above the 46th degree of latitude: but it appears that its range is extensive in the cold and repulsive regions lying between that part and the Arctic Ocean, where it finds but few enemies to interrupt the scanty enjoyments the climate and soil afford.

An observer, at first view, might hesitate to decide to what order or species of animals it belongs; and De Blainville has made a name for it, which expresses a similar doubt. He calls it "Ovibos moschatus," or Sheep Ox with the smell of musk; and truly, as the Naturalist's Library remarks, while it resembles the sheep in its long hair or wool, and in its plain and innocent expression of face, it is as much like the cow kind in the horns and general form and proportions of body. It therefore is regarded by the authors of the beautiful popular work just quoted, as holding an intermediate place between the Bovidæ and the Tauridæ, or the sheep and oxen; while other writers find it names and places accordant with their views. A more intimate acquaintance with it may hereafter be obtained, when less difficulty may be found in determining how to name and where to place it in the scale of the animal kingdom.

The Musk Ox is of small size for one of the cow-kind, being rather smaller than a common Scotch Highland bullock, having shorter legs. The front of the head is covered with hair, with the muzzle and part of the upper lip; while long hair hangs down from the lower jaw, which, with that of the neck, forms a thick, flowing mass, covering the whole forepart of the animal, and falling like a dewlap, down to the middle of the leg. The back and sides also, are thickly covered; and although the hair on the hips is not so long, the tail, which is short, is entirely concealed by it; and the general aspect is like that of a large sheep, or a Lama or Alpaca burthened with an abundant fleece. At the same time, as we before remarked, it corresponds, in some points to the Grunting Ox, figured and described above.

Railroad Tracks.—The English Parliament after a full deliberation with the principal Engineers, have come to the determination to require all Railroads hereafter made, to have their tracks 4 feet 8 1-2 inches wide. There are now in England roads of this width that cost over 50 millions sterling; and roads of 5 to 7 feet wide, costing 5 millions sterling. The question is under consideration whether these roads shall be reduced to the general width.

The Hawthorn.

Among the plants which we desire to see cultivated in our country are those shrubs which are most appropriate for h dges. One of the most interesting of these is the English Hawthorn, of which we have procured some of the berries, for the supply of such of our subscribers, as may be disposed to plant them. It belongs to the genus Cratægus, of which there are about 80 species and varieties. In England this hardy plant, with its graceful little lobed and serrated leaves, borders many a country road and path, and forms a dividing barrier between adjacent fields and gardens; and whoever has had an opportunity to contrast its agreeable verdure, and the rich fragrance of its flowers with the barren deformity of our rude rail fences, must have felt a wish to see a change made in our country, so much for the improvement of our rural landscapes, and so favorable to economy in fencing.

The whole of this genus of plants, are of rather slow growth, but susceptible of easy training, and modification into a great variety of forms. It surprizes a stranger in Europe, to see hedges trimmed and clipped so as to exhibit the shapes of cones, pyramids, and even animals, while they sometimes form low but impenetrable walls of verdure, and occasionally, as in Holland, tall open-work fences, showing the blooming flower-garden through a net work of emerald green. When shall we have similar improvements introduced into our country?

In the northern parts of the Union, the Hawthorn, it is feared, would be out of its climate: although we have known it live and apparently flourish on Connecticut river. A friend, living on the Hudson, however, near Pougkeepsie, informs us, that he thinks the Trivet may prove, on the whole more appropriate for hedges in the northern states; and after trying the Buckthorn and Hawthorn with some success, he is making experiments with cuttings, of the result of which we shall hope to be informed. In the meantime, however, our readers may well direct their attention to the hawthorn, and without waiting for others to settle any doubtful question, plant the few hawthorn berries which we shall send them, and form their own opinions. If they will plant them, either in pots or in the ground, they may soon become familiar with the characteristics of a useful and beautiful plant, peculiarly interesting for its associations with English and Scotch poetry; and will be able to ascertain, for themselves and others of what climates, soils and situations are favorable or unfavorable to its growth.

We wish our friends to bear in mind, that we are unable to send them as many seeds of any kind as we should be happy to furnish them with, but at the same time would have them feel, that the practice we encourage is useful, and that a few plants, under the eye, may be more observed than a whole plantation at a distance.

We shall soon give an outline of the natural history of the Hawthorn, with something on other hedge plants, the Catalpa, &c. The spring is again approaching, and our readers may expect an occasional supply of a few seeds of different kinds.

Capture of an American Eagle.

An immense bird of the bald eagle species, was taken alive in the woods on Long Island, by a son of Judge Mitchell, a few weeks since. It appeared, after capturing him, that he had been wounded in the fleshy part of the right wing, and had, while his wound was not yet healed, been set upon by a great body of crows, and was driven to take shelter from them on the ground where he was taken, without injury, since which his wound has healed. His wings measured seven feet ten inches from tip to tip, and is a splendid specimen of his tribe, "hawked at by cawing crows and brought to earth."

A Locomotive Engine.

(*Continued from page* 56.)

"It is easy for the fireman to throw coal into the fire by the door, and to let water pass into the boiler whenever it may be necessary. This supply of water takes place by means of a forcing-pump, put in motion by the engine itself.

The lower part of the fire-place is occupied, as we have said, by a grate, and remains consequently open, admitting the external air required for the combustion of the fuel. The coal thrown into the fire-box falls on the grate and is supported by it. When the fire is lit, and the door of the fire-box is shut, the flame of the combustible remains confined in the fire-box. It would have no egress, if a number of small tubes, or flues, were not to lead the flame to the chimney, after passing through the whole length of the second compartment or cylindrical part of the boiler.

From that construction it will be easily conceived, that the fire being shut up in the fire-box, and completely surrounded with water, none of its calorific parts are lost. Afterwards, the flame, in its way to the chimney, divides itself among all the small flues we have mentioned. It crosses thus the water of the boiler, having a considerable surface in contact with it, and only escapes after having communicated to the water as much as possible of the caloric it contained. Once arrived at the extremity of the tubes, the flame is in the compartment of the chimney, and escapes freely through the chimney.

We see thus the heat applied here in two very distinct manners. All the water which surrounds the fire-box is in immediate contact with the fuel, and consequently subject to the action of the radiating caloric; on the contrary, the water which is placed in the middle compartment, receives its heat only from the contact of the flame and heated air which escape from the fire-box, so that it is exposed only to communicative heat.

It may be necessary to observe here, that the form of a boiler, with tubes, a form to which is undoubtedly owing the surprising power of the present locomotive engines, is a French invention. This ingenious idea belongs to M. Seguin, civil engineer and manufacturer in Annonay.

2. *Of the Action of the Cylinders.*—The second important part of the engine is the apparatus of slides and cylinders.

In the upper part of the boiler, that is to say, in the part occupied by the steam, there is a large tube, which is open at one of its ends and leads out of the boiler. It is by this tube that the steam is conducted into the cylinders. In the interior of the tube, is a cock or regulator, the handle of which extends out of the machine. By turning that handle more or less, the passage for the steam may be opened or shut at will.

The steam, being thus generated in great abundance in the boiler, and being unable to escape out of it, acquires a considerable degree of elastic force. If at that moment the cock is opened, the steam, penetrating into the tube by the aperture, follows it to the entrance of the valve-box. There a sliding valve, which moves at the same time with the machine, opening a communication to the steam successively with each end of the cylinders. These are placed horizontally at the bottom of the chimney compartment, where the passage of the flame and the sides of that compartment protect them against the condensating effect of the cold air, and keep them in a proper degree of heat.

When the steam has produced its effect, it passes into the tube, and is conveyed by it to the chimney, through which it escapes into the atmosphere.

The introduction of the steam takes place at a point purposely elevated, that the bubbling and jolting of the engine may not let the water of the boiler get in by the opening.

3. *Of the Cranks and Wheels.*—The piston-rods, being set in motion according to the foregoing explanation, and sliding in guides which prevent any deviation from a rectilinear horizontal motion, communicate a rotatory movement to the axle of the two hind wheels of the engine. This transformation of the alternate motion into a circular one, takes place after the manner of the common foot spinning-wheels, by means of a crank in the axle. However, as in the motion of a crank, there are two points in which the alternate force that puts the crank in motion, has no greater tendency to move it in one direction than in another, which takes place whenever the radius of the crank happens to be on the

centre, that is to say, in the direction of the alternate motion; the two cranks respectively, corresponding with the two pistons, are placed at right angles to each other. By that means one of the two has always its full effect whenever the other ceases to act, and the power of the engine never varies. The two cylinders being, as we have already said, placed beneath the boiler, the piston-rods communicate directly under the engine with the above-mentioned cranks. The crank axle being set in motion, the wheels, which form one body with it, turn at the same time, and the engine is propelled in the same manner as a carriage, which would be set a-going by turning the wheels round by the spokes.

The only fulcrum of the motion being in the adhesion of the wheels to the rails that support them, which adhesion causes them to advance instead of slipping round, it might appear doubtful whether, on such an even surface as the rails of a railroad, the engine could advance by means of the sole rotatory movement imparted to its wheels, particularly when the engine has to draw a considerable weight. But experience proves that, however slight the adhesion of a wheel to a well-polished rail may appear to be, as on the other hand, the power required to draw a load on a railroad is very small, that adhesion is sufficient, and the engine progresses, followed by its whole train.

In ordinary cases, the adhesion of two wheels is sufficient; particularly with engines, the weight of which is distributed so that the drawing-wheels bear about the two-thirds of it. When a great power of adhesion is required, the four wheels are made equal. In that case one may, if necessary, connect the two wheels of the same side together, by metallic rods placed on the outside of the wheels. The natural result of this is, that when the wheel or the axle turns, it carries along with it the crank-arm, and thus communicates the same motion to the other extremity of the connecting rod, and by it to the crank-arm of the second axle. Thus the power of the engine is communicated by the two hind wheels to the two others, and the engine then adheres by its four wheels.

In order that, while in motion, the engine may not slip off the rails, which, we know, are iron bars projecting above the ground, the wheels have, on the inner side, a flange that prevents any lateral motion. But as, on the other hand, that flange ought not to be in danger of constantly rubbing against the side of the rail, the tire of the wheel is not exactly cylindrical, but slightly conical. Its diameter is a little larger on the side of the flange than on the outward side; the consequence of which is, that, supposing the engine were to be for a moment pushed to the left, the left wheel, resting on its broadest part, would pass over more way than the right wheel, and by that means bring the engine back to its true place between the rails.

4. *Of the Safety Valves.*—The three preceding points form the foundation on which the action of the engine rests; the other parts are only secondary ones, that is to say, only designed to make the power produced by the former ones efficient. The boiler has two safety valves, one of which is sometimes shut up in a box, to put it out of the reach of the engine-man, and to prevent him from overcharging it, as he might be tempted to do in order to obtain from the engine a greater effect, even at the risk of damaging it. More commonly, however, that precaution is given up, on account of its inconvenience.

5. *Of the Water-Guage.*—A guage is likewise fixed to the machine to show at what height the water stands in the boiler. This guage is a glass tube, inchased at both its ends in two verrels, with cocks communicating with the interior of the boiler and appearing outside. When the two cocks at the top of the tube are opened, the water penetrates into the tube and takes the same level as in the interior. Another cock is designed to let that water afterwards run off. The use of this instrument is, that the engine-man may know when it becomes necessary to let the apparatus be refilled from the tender. As, however, the tubes and other parts of the boiler begin to suffer, that is to say, are apt to crack, when the water gets too low in the machine, there are, for more safety, on the side of the boiler, two and sometimes three small cocks, placed at different heights; by opening which one after the other the level of the water in the interior may be still more positively ascertained.

To be continued.

Destructive Hurricane in Rarotonga.*

On the 16th March, 1846, we experienced one of the most destructive hurricanes we have witnessed since our residence on the island, not excepting that of December, 1831, described by Mr. Williams, in his 'Enterprises.' We had already this year suffered from two severe gales.—one in January, and another in February, the latter of which almost desolated the island; and we were now pleasing ourselves that we should not probably experience another for some years to come.

Notwithstanding the mischief done by that gale, there were a few spots left untouched. There remained a few bananas standing, a few bread fruit and cocoa nuts on the trees, so as to keep up the spirits of the poor people; and they cheered themselves by saying it would not be a severe famine after all. Their houses, with a few exceptions, were left standing; and though the sea breaking over its accustomed bounds, rolled a considerable distance inland, and spoiled some of the streets in the settlement, the injury done would soon have been repaired. The people at this station had extensive plantations of potatoes and yams, which had experienced but little damage, and they were urged to continue planting, in order to avert the consequences of the famine occasioned by the great hurricane of 1831, the principal cause, as I now believe, of the distressing sickness and mortality of this people, which have continued to the present time. Everything seemed going on as well as we could expect, when by the last dreadful visitation, which baffles description, our hopes are not only destroyed, but we now resemble a company of poor emigrants landed on a desolate island, with scarcely anything to supply their present necessities, and who have to experience the extremes of want and poverty till they can obtain, by dint of labor, the necessaries of life. God, however, is our hope; he heareth the young ravens when they cry, and he will not be unmindful of us.

On the 14th inst. the sea was considerably agitated with strong squalls of wind and rain from the E. and E. N. E.; the mercury sunk a little, but not to indicate any danger. The wind continued to blow strong during the night, and we found the mercury continued to sink.

At 10 A. M. of the 15th, everything indicated a storm, and we commenced securing our houses as well as we could. The mercury having sunk a good deal, and the wind and rain increasing, at six P. M. we commenced bolting and barring our doors and windows. At eight P. M. we held family worship in the girls' school room, which is the lee-side of the house, being afraid to open the doors on the windward side, as the wind was blowing very hard. After commending ourselves to the protection of our heavenly Father, all the students and servants were urged to stay in the house, to render assistance should it be needed.

About 10 P. M. it was blowing a perfect hurricane; the roar of the sea and wind, with constant vivid flashes of lightning, making the pitchy darkness more dark—thunder mingling its scarcely distinguishable rumbling, produced an effect truly awful. By the violence of the wind the doors in some of the rooms were torn from their fastenings and hinges, the glass dashed to pieces. Every one had now full employment to secure what remained, by barricading with sofas, tables, and heavy boxes, what doors remained entire; a strong man was placed as a sentinel to each, and thus many were prevented from being broken to pieces.

We did not long remain in supense respecting the fate of our settlement: voices were heard from without entreating for shelter. Waiting a lull, we ventured to open the door, when the Chief's family and domestics entered, wet and ragged, having had their clothes almost torn from them by branches of falling trees, and having narrowly escaped a watery grave. In one of the houses, as the inmates were in bed, the sea gushed in and rolled over them: they made a precipitate flight, and, in their hurry, forgot their two children. They were scarcely outside, when the house came down, and the poor father, regardless of his own safety, returned to search for them, amidst the fallen ruins and increasing waves. He soon succeeded in extricating the elder, a little boy; and having given him in charge to some one else, returned to search for the other, a

* For drawings, descriptions and a history of this most interesting little island, of the Hervey Group, see Am. Penny Magazine, Vol. II., ps. 1, and 601.

little girl about one and a half years of age. After groping about sometime, he at last heard a faint cry, and directing his search towards the spot, feeling about in the sea and rubbish, he was at last successful. He drew her out of the water—she now seemed quite cold and dead: he clasped, as he supposed, his dead child to his bosom, and commenced wading his way through the water, when, after some time, to his inexpressible joy, he felt her little hands clasping his neck; and though we all thought the next day she would have died, she is now recovered.

Our house soon became the refuge of all who could come to us. The water from the mountains was now uniting with the waves of the sea, and threatening to engulf all who remained on the low land. Each succeeding company, like the messengers of Job, had some new disasters to relate: the sea threatening the lives of the people—the falling of houses—the chapel, our storehouse, the cottages belonging to the students, workshops, servant's houses, &c. Our horror cannot now be expressed, for the wind made our own house tremble to its foundations, and being full of natives, we all expected to have been buried in its ruins; but God was merciful, and heard our cry; and after one A. M. of the 16th, the mercury again began to rise, and about an hour or two after, the wind began to abate.

The rain during the night, at times, descended in torrents. This occasioned a rush of water from the mountains behind our houses; and the weight of water being so great, it burst our passage door open, and the house was soon partially flooded. To induce the natives to go out and clear away the rubbish to allow the water to run off, I put on my hat and went out with them. I was only out about three minutes. I thought I should have been beaten into the earth—it was like standing under a cataract—when I returned, I had not a dry thread about me. Exposed to the inclemencies of this dreadful night, many of the poor natives have suffered severely, having lost their houses and every bit of property they had in the world.

The next morning presented to our view a scene of desolation the most heart-rending. The whole is a complete wreck, a few headless cocoanut trees are the only conspicuous objects in the universal waste. Our beautiful stone school house lies a mass of ruins, broken down by the united force of wind and sea. The streets are impassable, from the heaps of large pieces of coral left by the receding waves. Only two habitable houses left in the settlement out of 217; of which 121 were good framed houses, and plastered with lime, and some of them built of stone, the walls only remaining. Looking around the Institution premises, at the bare walls of the student's cottages, and servants' house, three good framed houses, plastered with lime, one of which was our store house, now lay a mass of ruins with the carpenter's and blacksmith's workshops—the printing office partially unroofed. The Institution house standing in the midst, though not unscathed, seems to say, "I only am left to tell thee." A great number of books are irreparably injured, and the Society's arrow root, which was in a stone cottage at the sea-side, was for sometime driven about by the waves, and much of it is lost; what remains I fear, is much injured.

Ten years' hard labor will not restore us to the same state of temporal prosperity we were in before the gale; but we dare not murmur; our prayer is, that these afflictions may be sanctified. Yesterday, being the Sabbath, we held two services in the open air: one early in the morning, ere the sun was hot, and the other in the evening, when it was nearly down. We have no shady groves under which to assemble. What few trunks of trees remain standing are entirely leafless, and almost branchless. Our subject in the morning was from Nehemiah, ix. 33; that in the evening, 2 Peter, iii. 11. I believe nearly all attended, and they appeared deeply impressed with the services of the day. The events of the past week brought forcibly to our view the solemn and awful description given by Peter of the dissolution of all things; our prayer is, that our minds may be more deeply impressed than ever with eternal realities; and while we are made to feel that here we have no abiding city, may we seek that which is to come!

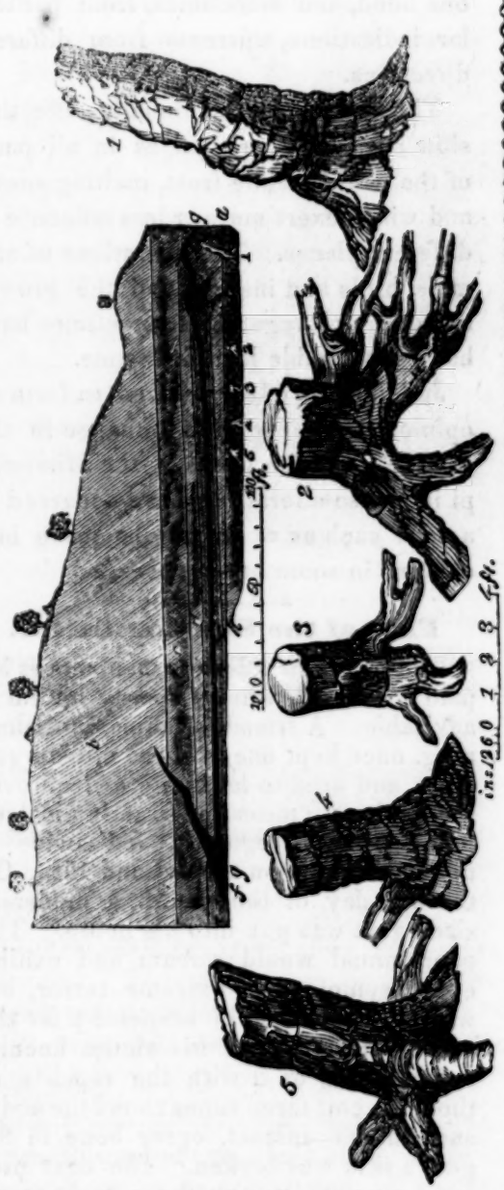
Our people are now busily engaged in erecting sheds for temporary dwellings, and after next Sabbath, intend (D. V.) to erect a temporary place of worship. Our schools are stopped, and we have been obliged to reduce our printing establishment, so that we shall not be able to advance as heretofore.—*Rev. Mr. Buzacott.*

RUINS OF LANDISFARN.

This ruinous building is on Holy Island, or Lindisfarn, near the mouth of the river Tweed, and the city of Berwick. The place is reported to have been the spot where Christianity was first introduced into Northumberland, and from which it was diffused through the surrounding region. It was long the residence of the bishops of Durham, and for four centuries the seat of learning for the whole north of England. It was formerly known also by the name of *Helichlant*, or holy land—a word of Danish or Anglo-Saxon origin. The name *Lindis*, a brook which empties opposite, and *farn*, island, formed its later name.

It lies about two miles from the shore, with which it is connected by a bar, which is left bare at low water. Bede calls it a semi-island, or 'twice an island,' as it becomes, twice every twenty-four hours, a part of the main land, and again an island. Travellers, however, have often lost their lives, in the pools and qnicksands which are found on that narrow piece of ground. Lindisfarn is 2 1-4 miles by 1 1-2, and contains 1000 acres, half of which is so sandy as to be useless except for a rabbit warren. The island belongs to the crown, the see of Durham, and Mr. Henry Collingwood Selby, lord of the manor. It is flat, with a steep shore on the south, where a conical rock, 60 feet high, rises from the water with a fortress on the top, nearly dismantled in 1819, but garrisoned by a few soldiers. There is a poor fishing village of 100 houses. The island is now visited for bathing. The northern part is wild and rocky, as seen from the water.

The bishopric of Lindisfarn was founded in 634, and fourteen bishops successively resided here. One of these was Cuthbert, celebrated by the oldest English historian, Bede, as the hero of many pretended miracles, such as St. Filumena is now said to work in Italy. For fear of the Danes, the see of the bishop was removed, near the end of the 10th century; and about 1094 the Priory was founded. The Benedictine Monks, who possessed it, sometimes enjoyed an income worth about £2000 of the present English currency: but Mr. Raine declares that there never was a single classical author or any chronicle in their little library, and that at least from the year 1416 they were generally destitute of a Bible. Henry VIII. after the dissolution of the monasteries in England, granted Lindisfarn to the see of Durham.



BURIED TREES.

In making a deep cut for the Durham railroad, in England, in the year 1845, five stumps of trees, apparently of the palm kind, were discovered, which excited the attention of the learned and the curious. The spot was visited soon after, by a Committee of the British Association, during its next meeting, as has been noticed in the first volume of our magazine, in the letter from Mr. Schoolcraft. The cut which we now insert has been furnished us by him, and gives a correct idea of the position of those remarkable remains. The best preserved and most interesting of them has been covered with a wooden box, and kept closed, by a person residing near the place, who exhibits it for a small sum. One of the most striking facts in this case is, that a row of stumps are found in their natural situation, on the original surface of the earth.

Explanation of the Cut.—*b*, *c*, *d*, shows the three upper strata cut through in the section for the railroad. The two lower of these are horizontal, and the upper forms a hill, the height of which may be imagined by observing the diminutive appearance of the trees on the summit. *g*, is a lower vein, (we believe clay;) and *f*, *g*, another, from beneath, penetrating all the superior strata, and presenting one of those phenomena difficult to account for. *a*, is the lowest stratum of all. 1, 2, 3, 4, 5, (at the bottom of the section), show the situation of the five stumps of trees in it, on one level, and at nearly equal distances except the last. The scale just below shows the dimensions of all the parts, and shows the section to be about 100 feet in depth.

The larger figures, 1, 2, 3, 4 and 5, mark the same stumps, presented in the same order, at a nearer view, and of such size that their forms may be distinctly seen, while a scale of inches below shows their sizes.

The remains of plants, as well as of animals, are found in most parts of the world, buried at different depths, and sometimess imbedded in rocks. Recent examinations have led to many theories to account for the phenomena, and the subject is highly interesting.

There are many places where the surface of the ground has been raised, in different parts of our country; and it is a good habit to direct our attention to this subject in our daily walks. Along the banks of rivers and brooks it is generally easy to account for an accumulation of soil in some places, and for its removal in others. Two simple facts are

sufficient to direct us far in our enquiries: 1st, the different degrees of power of flowing water, at different rates of velocity; and 2d the manner in which substances carried away by it are deposited, when its motion is checked or stopped. Rocks of considerable size may be borne to a distance by a a rushing stream, especially if on a declivity, or forming parts of a barrier, which dams the water until it rises and bursts through. So when a pond or lake is suddenly drawn off, by the deepening of its outlet, extensive and astonishing effects are sometimes produced by the immense power of the descending flood. To estimate such a power, some knowledge of hydrostatics and hydrawlics is necessary: for but few persons are fully aware of the tremendous pressure of deep water, even in small quantities.

A pond on a hill in Vermont burst its side a few years since, and caused a scene of frightful devastation in a few minutes, making a channel in the earth which will never be obliterated; and the deluge in the White Hills of New Hampshire in 1826, in the course of an hour, tore the ancient forests from the mountains, with the earth and loose rocks, and swept them into the vallies below, swelled the streams to a thousand times their proper size, and changed the face of nature for twenty miles along their banks.

The more rapid and large the current, the larger and heavier the particles of earth or pieces of stone it is able to carry, and the greater the quantity of matter it may transport in a given time. So, when the velocity begins to subside, the heaviest objects first sink, and afterwards the lighter in succession. Where we find stones, gravel, sand, &c., lying in a corresponding succession, we may therefore presume, that they have been formed by a single inundation. But it often happens that heavy substances are found lying upon beds composed of lighter ones, and we are obliged to suppose more than one flood, and sometimes, from particular indications, currents from different directions.

The rains are continually effecting slow but extensive changes in all parts of the world; while frost, melting snows and winds exert more or less influence in different places. The operations of animals, birds and insects, and the growth and decay of vegetables sometimes have had considerable local influence.

Judgment is often required, to form an opinion of the period of a change in the surface. On the banks of the Mississippi immense alterations have occurred in a day: such as would not be made in a century in some other places.

Fare of the Boa Constrictor.

The boa is harmless to man, unless his path is crossed, when a speedy retreat is advisable. A friend of mine, in Samarang, once kept one of these monsters as a pet, and used to let him crawl all over the garden; it measured exactly nineteen feet. It was regularly fed twice a month, namely, on the 1st and 15th. On the first day of the month, a moderate sized goat was put into his house. The poor animal would scream, and exhibit every symptom of extreme terror, but was not kept long in suspense; for the snake, after eyeing his victim keenly, would spring on it with the rapidity of thought, coil three times round the body, and in an instant, every bone in the goat's skin was broken. The next process was to stretch the carcass to as great a length as he could before uncoiling himself—then to lick it all over; and he commenced his feast by succeeding, after some severe exertion, in getting the goat's head within his mouth. In the course of twenty minutes the whole animal was swallowed. The snake would then lie down, and remain perfectly dormant for three or four days. His lunch, (as I may call it,) on the 15th of the month, used to consist of a duck. This snake was given, in 1815, to Lord Amherst, on his return from China, and reached the Cape in safety. There it was overfed, to gratify the curious visiters, and died in consequence before the ship reached St. Helena.—*Davidson s Trade and Travel in the Far West.*

London Markets.

From Vinchon's Report on the Markets of England, Belgium, Holland and Germany, published in Paris in 1846.

The city markets are six in number:—Newgate, Smithfield, Leadenhall, Billingsgate, Farringdon, and Honey-lane.

Newgate market, which is but a short distance from Smithfield cattle market, is the principal one for the sale of meat. The enormous joints of beef suspended in the shops, the innumerable sheep, calves and pigs, which daily load the stalls, are a subject of astonishment to the foreigner who visits this market; for it is well known that in England meat constitutes the principal article of consumption; the eye accustomed to dwell on the masses of vegetables every where displayed in our own markets cannot see without wonder these vast exhibitions, as remarkable for the quantity as for the beauty of the meat exposed for sale. This feeling of surprise would be still more lively, if Newgate market were constructed with such regularity as to display at one view the abundant provision made for daily consumption: but such is not the case. Newgate market is nothing more than a badly arranged assemblage of shops of different sizes, opening on courts or passages which appear to have been covered in after they were formed. The market has in fact been enlarged at various times by additions of the adjoining property; space, air, and light are all wanting. We noticed in the shops that the blocks on which the meat is cut up are very low; being only between two and three feet high. This is accounted for by the custom of cutting up the meat in the shops, an operation which with us is performed in the *abbattoirs*. We can readily understand that if higher tables were used, the more important parts of the animal would be out of the butcher's reach.

The slaughter-houses are in the neighborhood of Newgate market, to which they form an appendage. These are in buildings in the narrow streets or lanes which abound in this part of the city, and generally consist of a single room or covered court, divided into two parts by a slight partition; the one side serving as a stall for the animals which are slaughtered in the other. These slaughter-houses are furnished with the necessary apparatus for suspending the slaughtered animals, but every thing is rude and behind the age, and the contents and the intestines are washed down into the sewers. In these confined slaughter-houses, however, a considerable amount of business is transacted; for whilst Newgate market receives a portion of its supplies from different parts of England, it is also the principal place for the sale of meat furnished by the cattle brought to Smithfield market.

We took advantage of our visit to this locality, to witness the English mode of slaughtering oxen. In France, after the animal is secured by a rope, by which his head is fixed low and immoveably, he is stunned by a blow which throws him down, when the carotid artery is easily severed. The blood flows freely from the wound, and the animal dies from exhaustion. By this mode the blow of the iron mallet simply produces a concussion of the brain, sometimes accompanied by a rupture of the spinal marrow but it is in general insufficient of itself to cause death. On the contrary, on the English plan, the animal is not bled until life is extinct.

In the preparation of their meat, there are two other particulars in which the English butchers differ from the French. In the first place they do not inflate the animal, as in England, this would be considered fraudulent and liable to severe punishment: besides, when the ox has been hung up, opened, and skinned, the external parts of the meat are washed with cold water, and wiped with linen cloths.

Leadenhall market is not constructed with greater regularity than Newgate market. With the exception of some parts which are better arranged, the market is also a labyrinth of lanes and covered courts, where the different articles are exposed for sale in shops or upon stalls badly suited with regard to air and light. Leadenhall is principally a market for the sale of poultry and game, but butter and eggs, meat and leather are also sold there, forming in reality four distinct markets. There is no place set apart for the purpose of killing poultry, which appears to be brought into the market dead. The sale of leather is carried on in two small buildings, united by an iron bridge thrown over the passage which separates them, and they are constructed on the same plan as our hay-

market. The coarse hides are laid out on the ground floor, under a shed open on all sides; the finer hides and skins are contained in warehouses on the floor above. In the adjoining houses surrounding one of these buildings, private warehouses and counting-houses have been established, all connected with this particular trade, which seems to have its focus in this spot. Only a small stock of the article is kept in these warehouses; and so far from the whole of the leather trade being carried on here, the mode of transacting business in Leadenhall market seems to be somewhat analogous to that practised in our Rue Mauconseil. We may add that the leather trade does not retain undisputed possession of the locality, where both raw and cured hides are exposed for sale. It is stated that this exposure, so little in accordance with atmospheric salubrity, has compelled the East India Company to build up the windows of one of the façades of their hall. This, however, is but one effect of corporation monopoly, which, keeping in view the profit arising from a vested privilege, has no sympathy with the complaints of the inhabitants of the locality.

A short distance from the Leadenhall street is the Billingsgate fish-market, of ancient fame. Situated on the banks of the Thames, it receives the fish brought in by the numerous fishing-boats. This market, which appears to be at least partially built on piles, is held in shabby wooden buildings, and has a very decided air of confusion and disorder. It is difficult to comprehend how an establishment so confined and so badly arranged can suffice for the requirements of a very extensive trade. The wholesale business is transacted under the common sheds, where a very active movement is kept up during the morning, and the retail trade is carried on in the open shops on each side the narrow passages which run from Lower Thames street to the Thames. In these shops, which have nothing showy to recommend them, we have seen such an abundance of salmon as we had previously no conception of. But the fish-market, properly so called, extends over the whole of that part of the river corresponding to the market on shore: the ships laden with salt-fish, and the various fishing vessels, press forward to the foot of the piles; and there, on ship-board, is conducted the sale of oysters, which is effected through the agency of measurers, who perform their duties by proxy. There are morning measurers and day measurers; the former measure the oysters which are conveyed from the boats in carts before the opening of the market; the latter begin their work on board as soon as the clock strikes. It appears to us that the employment of oyster-measurers constitutes a species of office the utility of which is not commensurate with the expenses entailed upon the buyers.

Farringdon market, built for the sale of vegetables, fruit, and meat, consists of a court, surrounded on three sides by covered galleries, nearly of the same size and plan as those of the market of St. Germain, in Paris. In the court has recently been erected a small gallery for the stowage of fruits. The hollow columns which support this erection also serve as pipes for the conveyanc of rain water from the roof. This market, which was formerly held in Farringdon street, has gained nothing by its removal. The government, desirous of securing an improvement which would be a great public convenience, consented to furnish the funds required for the erection of the new market. By this advance it would be entitled to collect a moiety of the proceeds; but as the expenses attending repairs and management have hitherto absorbed the revenue, the sacrifice has as yet received no recompense. It seems to have ben a mistake to count upon the rent of the shops in the covered galleries. These shops, which are especially adapted for butchers, for the most part remain empty, although well calculated to withdraw from the over crowded Newgate market a portion of its business. But centralisation has an attraction which it is difficult to overcome. So long as Newgate market continues to be the principal place for the sale of meat, dealers and consumers will continue to flock there; and they will prefer the inconvenient stalls of that market to the more comfortable shops provided in other localities. Notwithstanding all that has been said, Farringdon market is the only one in the city which has any claim to consideration as a building; the erections which compose it are regular, and have a very satisfactory architectural appearance.

But that which is especially open to

remark, and is a subject of surprise to every stranger visiting London, is the existence of the Smithfield cattle market in the heart of one of the most populous quarters of the city, and at the junction of so many narrow thoroughfares. This market is held twice a week, in a large, irregular space, which has been enlarged at various periods, and opened in many directions to the general traffic. On Monday are sold the cattle intended for slaughter, such as oxen, cows, calves, sheep, and lambs; on Friday, to these are added horses and swine. The arrangement of this market is far from affording the conveniences of our markets at Sceaux and Poissy: the oxen are secured by ropes in a very bad state, and when they are sold, they are conducted to anothsr part of the market, where they are marked, under the superintendence of the purchasers The calves and sheep are confined in pens, about six feet square, formed of thick bars; and what appeared to us very awkward, was the necessity of pushing through the animals, to pass from one pen to another.

Improvements in Blacksmithing.

The Scientific American says, sawing heated iron is not known or thought of by blacksmiths; and when several forks or branches are to be formed from one stock, even if the branches are required to remain, eventually, nearly in contact, and parallel to each other, the usual method is to split the end of the iron with an awkward cold iron chisel, thereby deforming the edge of each, after which they are brought together as well as may be, usually retaining a roughness of form, if not a deficiency of size and strength, near the juncture of the branches. Instead of this tedious process, the iron, when heated, may be put into a vice, and the ends slit, with a suitable saw, which would save much labor in hammering and filing. A saw for this purpose should be made thicker at the edge than at the back, and with uniform teeth, about one twelfth of an inch apart. The saw, when used, must be often dipped in water to prevent its becoming too much heated. There is also a method of sawing or cutting hardened steel, which is not so generally known as it should be.

A circular piece of common thin iron plate or sheet iron, being adjusted to a lathe, or by other means put into a violent rotary motion, will readily cut off a file, a cutting tool, or tempered steel spring, without drawing or reducing the temper. There is much mystery in the wonderful effect of this buzz, and its cutting property is attributed to electricity. It answers a very convenient purpose, however, when the shape and form of the articles are required to be altered without affecting their temper. It furnishes a convenient method for cutting teeth of large saws, but is objectionable on account of the newly cut surface being left so hard that they cannot be readily filed by a common file. Connected with the subject of 'mysterious effects,' it may be stated that a bar of iron of almost any size, may be instantly sundered while hot, by the simple application of a piece of common brimstone. Knowledge of this fact will be useful when some piece of iron work is to be severed, but which, as is sometimes the case, is so constructed and situated that no ordinary chisel or cutting tool can be brought to apply. Holes may be instantly perforated through bars or plates of heated iron, by the application of pointed pieces of brimstone. This phenomenon is curious, although it seldom affords practical utility.

Philo-Italian Society.

A society bearing this name has been formed in London, under promising auspices. A spirited meeting has been held in Brighton, England, at which the celebrated Signor Ciocci, a sufferer from the inquisition, was present. Rev. William Chalmers, said: In Italy, the Bible, if not a sealed book, is padlocked by the priest, and books teaching the Protestant faith are not allowed to be circulated. Bibles are now rotting in the custom house. If, then, we were really to have access to Italy, it would appear that it must be mainly through those Italians whom Providence brought to our shores; and the return of those instructed by this society would sow a seed which would never die, and of which we could not tell how the harvest might issue. It was expected that the society would shortly be connected with the Foreigners' Evangelical Society, recently formed in London, for the purpose of concentrating, under one common management, the religious wants of the Germans, French, Italians and Spaniards."

Egyptian Antiquities.

We feel a deeper interest than ever before, in this subject, because we are now better acquainted with the discoveries made by the learned men of Europe. We know something more of the grounds of the conclusions to which they have come; and perceive that many of them are satisfactory, nay, unquestionable. We have also met with several correspondences with facts alluded to in the Word of God, which illustrate and confirm its correctness, in minute as well as great particulars; and we are led to salutary reflections, and affecting emotions, fitted to admonish and to improve the life.

With these enjoyments and advantages, which we feel that we have recently received, we acknowledge ourselves indebted to Mr. Gliddon, whose new course of lectures we are now attending. That gentleman has spent most of his life between his 10th and 32d years, in Egypt. His father, and himself afterwards, was Consul at Cairo. He has trodden and retrodden a great part of the country from the mouth of the Nile to the Cataracts, on hunting excursions, or visits of curiosity to the various places of curiosity, and formed personal acquaintance with most of the learned travellers in that country, to whom, as well as to our fellow citizens in Egypt, he rendered important services.

We first met with Mr. G. about ten years ago, when he was making exertions to induce some of our scientific associations to import valuable Egyptian curiosities, offering his aid, in a liberal manner. We had the pleasure to add our feeble assistance to his, but the pain to witness the total failure of his good and enlightened plan. There will always be reason to regret that it was not successful. When Mr. G. had left his official occupations in Egypt, he formed another project for the same end.

He prepared a course of popular lectures, which were found so well adapted to the taste and intelligence of our countrymen, that they were received with great gratification and applause in different cities, during the past four years. A few months ago he visited Europe, to acquaint himself with the progress of study among the archæologists, many of whom, in different countries, are now devoted to the investigation of Egyptian subjects of different kinds; and he has returned, better prepared than ever, with information, and hundreds of specimens from temples, catacombs, &c. with engravings, plans, landscapes and architectural views, admirably adapted to illustrate every interesting point to which he may refer.

As we have given repeated notices of Egyptian antiquities, and several extracts from the lectures and and the pamphlet of Gliddon, in our first and second volumes, we intend in future to select topics not there touched upon, referring our readers for many interesting particulars to Vol. I. ps. 81, 65, 83, 117, 129, 193, 392 and 423, and to Vol. II. pages 321, &c.

The state of that people, as it is now presented to us, in the light obtained by the arduous and protracted studies of the learned men of Europe, is one of the most solemn, and sad, but salutary lessons to be found within the whole scope of human history. For ourselves we must acknowledge, that no other spectacle has ever been presented to our view, so fraught with impressions of the degrading nature of false religion, and affording by contrast, such affecting evidences of the value of the true. But while we feel grateful to the learned for their discoveries, we are compelled to dissent from some of their deductions and theories.

All local wits, all those whose jests are understood only within the range of their own circle or coterie, are decidedly objectionable in general society.

JUVENILE DEPARTMENT.

Sagacity of the Dog.

The writer once owned a dog whose natural sagacity had been highly cultivated in his puppy days. Innumerable, almost, were the antics which he could perform, to the great delight of all the children in the neighborhood, with whom he was an especial favorite. As, however, these were rather the result of hard drilling than sagacity, they are not worth relating. The early training to which he had been subjected had, however, the effect of expanding his powers, and giving a general enlargement to his intellect. He acted often as though having a perfect comprehension of language, and as showing the exercise of a reasoning faculty. For instance: One morning I had occasion to borrow an article at a store in the village, and, calling at several other places on my way home, I returned to my room. Some few hours afterward, wishing to return the borrowed article, I placed it in 'Hero's mouth, with direction to take it to the store of Mr. B. I gave the order as an experiment, not much expecting to be successful; but he received the article readily, trotted out of the room and down the street without hesitation, until he entered the proper store, laid his charge upon the counter and returned to his master.

As was no more than natural, Hero seemed much interested in every butcher and butcher's cart which came into the neighborhood of his master's house. By watching attentively the butcher's proceedings, he arrived at the fact that meat could be obtained for money. In some of his wanderings about the house, he found a cent in an exposed situation, and appropriated it to his own use. The next time that a butcher's cart came into the neighborhood, Hero made his appearance with his prize, and attracting the butcher's notice, dropped the "copper" at his feet, and waited till he had received its value in meat. After this, Hero was supplied very freely with money by the boys and others, all of which he expended in the same way. Once or twice he received a written order for his dinner, and thus made another advance in the knowledge of currency. Finding paper as serviceable as copper, he began to think of a currency of his own; and hunting up pieces of white paper in the streets, would carry them to his friend the butcher. A few protests of his paper, however, drove him back to the specie currency, in favor of which he seemed ever after firmly established. Hero, with all his sagacity and all his good qualities, was not without his failings. He was an arrant coward, and lost by this failing many a good thing which his wit had earned him. There is an old proverb that "those who know nothing, fear nothing." Hero knew a great deal, and feared everything.

Near to my father's house there lived a retired sea-captain, in all the comfort which well earned wealth could afford. He was a good old man, and had ever a kind word and pleasant smile for me, however often I might meet him. As I think of him now, I cannot very well separate his image in my mind from his little yellow dog, Tiger, who was always at his heels, excepting on the Sabbath. I am sorry to say that my old friend was no meeting-goer, but then Tiger was. With the females of the family he was always at church on Sunday. When Tiger was well advanced in years and firmly fixed in his habits, his master's family changed their place of worship. To this arrangement the dog would never conform. Let others go where they might, old associations were too strong with him to be easily dissolved. From puppy days he had attended an Episcopal church, and in his old age he would not desert it. Though a staunch churchman, he was never inclined to Puseyism, for I remember that his life was passed in perpetual warfare with everything of the kind. If Tiger was blameworthy for anything, it was for his *dog*matism in this matter. But to return, when the family left the services of the church, he continued to attend them. Often has he been seen, of a pleasant Sabbath morning, making himself as comfortable as possible in the warm sun. The first bell would ring for church, but Tiger was unmoved. The second bell would ring, and still Tiger cared not—it began to toll, and then with head and tail erect and with a sober trot he would start off for church.—*Evening Journal.*

On the Reading Railroad, on the 15th, a locomotive drawing a train of empty cars, exploded, killing five men. One body was blown six hundred yards.

POETRY.

Words of Cheer.

Be firm and be faithful,
Desert not the right;
The brave become bolder,
The darker the night!
Then up and be doing,
Though cowards may fail,
Thy duty pursuing,
Dare all and prevail!

If scorn be thy portion,
If hatred and loss,
If stripes or if prison,
Remember the cross!
God watches above thee,
And he will requite;
Desert those that love thee,
But never the right.—*Mrs. Thomas.*

God Bless the Honest Laborer.

God bless the honest laborer,
The hardy son of toil,
The worker in the clattering mills,
The delver of the soil:
The one whose brawny hands have torn
From earth her hoarded wealth,
Whose sole return for ceaseless toil
Is nature's boon, sweet health.

Bless him who wields the ponderous sledge,
Clad in his leathern mail,
That, safe as warrior's panoply,
Guards from the seething hail,
That gushes from beneath each stroke,
Each mighty gushing blow,
He seeks to lighten labor's toil
Where ruddy fires do glow.

Bless him who turns the matted sod,
Who, with the early dawn,
Hastens to gather nature's store—
Harvests to the yellow corn!
Who plants in nature's bosom wide
The fruitful golden grain,
And gives it to her guardian care,
The sunshine and the rain.

Bless him who lays the massive keel,
Who bends the trusty sail
That bids the ocean wanderer
Safe battle with the gale;
Who rears the tall and slender mast,
Whence float to every breeze
The stars and stripes of liberty,
A rainbow o'er the seas.

Bless him whose ribbed palace rests
Upon the heaving sea,
Who scorns the dangers of the flood
The breaker's guarded lee;
Who in the ocean cradle sleeps,
Calmly in storm-fraught hour,
Unfearing that his bark will quail
Before the tempest's power.

* * * *

Bless them, and may the workman's hand
That framed the giant earth,
That bade each star in glory shine,
That gave to seas their birth,
Reserve on high a resting place
Within the realms of light,
For every honest son of toil,
When pass'd death's darksome night.—*Sel.*

ENIGMA.—No. 32.

I am composed of 22 letters.

My 12, 17, 20, 9, is what a great many little boys and girls have.

My 7, 21, 3, has ruined many.

My 5, 11, 12, 10, is what a great many have incurred.

My 7, 19. 20, is a troublesome animal.

My 18, 19, 20, is a useful animal.

My 18, 22, 2, 10, 4, 15, is an East River Boat.

My 1, 6, 7, 2, is what the inside of an apple is called.

My 3, 19, 12, is a useful article at school.

My 5, 4, 6, 7, is necessary to the comfort of a room.

My 20, 22, 8, 11, 9, is what we could not manage very well without.

My 13, 14, 15, is a domestic animal.

My 16, 19, 20, 17, is a nice fruit.

My 18, 21, 19, 10, 8, 22, is a fast sailing vessel.

My whole was a great American Naval officer. J. G. C.

Solution of Enigma No. 31, Vol. III. p. 64. —Constantinople.

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